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Capture valve facilitates a slowing of the stream flow and bead capture by a fixed magnet placed above or below the valve. The ethanol solution is completely run through the system followed by air yielding a relatively dry and clean

68

can be employed in practicing the invention. It is intended that the following claims define the scope of the invention and that methods and structures within the scope of these claims and their equivalents be covered thereby.

SEQUENCE LISTING

<160> NUMBER OF SEQ ID NOS: 2

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<211> LENGTH: 15

<212> TYPE: DNA

<213> ORGANISM: Artificial Sequence

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<223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic oligonucleotide

<400> SEQUENCE: 2

tttttttttt tttttt

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bead bed, with purified products, in the valve. At this point the valve is closed and reopened (in coordination with other valves) to fill it eluent solution from the associated port. For an STR analysis or other analyzes where an internal size standard is needed, the eluent can contain a size standard. The solution is moved between the Elution valve and the Capture valve to facilitate mixing, ending with the solution in the Elution valve. The Sample valve is then opened in coordination with the Elution valve closing to "shuttle" the sample through the sample channel leaving it filled. The sample FASS injection is carried out as previously described. An additional noteworthy function of the device is that in one embodiment the Reagent input port and Reagent pump are used to provide metered STR reaction premix to the reaction channel (250 shown in FIG. 6) after the swab extraction of DNA on the sample preparation device; in other embodiments, the device can provide other nucleic acid reaction reagents such as cycle sequencing mixture or provide PCR reagents to perform a PCR amplification followed by providing cycle sequencing reagents to perform cycle sequencing with bead-based cleanup reactions integrated as needed. Other chemistries will be apparent to one skilled in the art.

While preferred embodiments of the present invention have been shown and described herein, it will be obvious to those skilled in the art that such embodiments are provided by way of example only. Numerous variations, changes, and substitutions will now occur to those skilled in the art without departing from the invention. For example, any MOVE valve, pump, router, or other MOVE device described herein can be replaced with any pneumatically actuated valve, pump router or other device. It should be understood that various alternatives to the embodiments of the invention described herein

What is claimed is:

1. A system configured to perform a method comprising:
 - extracting DNA from a sample;
 - isolating the extracted DNA;
 - amplifying a plurality of short tandem repeat (STR) markers of the isolated DNA;
 - separating a plurality of amplified STR markers by electrophoresis;
 - detecting a plurality of separated STR markers; and
 - performing computer analysis of a plurality of detected STR markers to produce a computer file identifying a plurality of detected STR markers;
 wherein the method is performed in less than 4 hours; and wherein the system comprises:
 - a) a sample preparation module adapted to extract DNA from a sample in a non-microfluidic volume, to isolate the extracted DNA by capture of the extracted DNA to particles, and to move the particles comprising isolated DNA through a first microfluidic channel;
 - b) a reaction module comprising a reaction chamber in fluidic communication with the first microfluidic channel and adapted to immobilize the particles comprising isolated DNA and to perform an amplification reaction on the isolated DNA to produce a reaction product;
 - c) a separation and detection module in fluidic communication with the reaction chamber and adapted to separate the reaction product by electrophoresis and to detect the separated reaction product; and
 - d) a data analysis module adapted to receive data on the separation and detection of the reaction product from the separation and detection module and comprising computer-executable code that transforms the data and produces a computer file identifying the separated and detected reaction product;